Chapter 1
Introduction

1-1. Purpose

The purpose of this Engineer Manual is to provide specific technical and engineering guidance to personnel for the collection, handling, treatment, and disposal of low-level radioactive wastes (LLRW) and mixed radioactive and hazardous wastes (MW). It is intended to supplement the general management guidelines contained in Engineer Manual (EM) 1110-35-1, "Management Guidelines for Low-Level Radioactive Waste (LLRW) and Mixed Waste (MW) Site Remediation" and EM 1110-1-502, "Technical Guidelines for Hazardous and Toxic Waste Treatment and Cleanup Activities. "

1-2. Applicability

This manual applies to all HQUSACE elements and all USACE Divisions and Districts whose work involves low-level radioactive wastes and mixed wastes.

1-3. References

Required and related references cited in this manual are listed in Appendix A.

1-4. Background

The U.S. Army Corps of Engineers has a long history of service to the nation, but Corps programs have changed dramatically in recent years. During the 1980s, the Corps began to take on numerous aspects of the job of providing engineering expertise for environmental cleanups at many federal facility sites. These federal facility sites, most of which were under the control of the Department of Energy (DOE) or the Department of Defense (DoD), have been contaminated by a wide variety of hazardous wastes, including radioactive waste. Much of the contamination occurred in the 1940s, 1950s, and 1960s, when actions of federal agencies and their contractors met the regulatory requirements at the time and were not thought to pose any risk to the public or the environment. However, these actions are now being governed by the laws of the 1970s and 1980s, and are being judged by the standards of practice of the 1990s. In addition, during wartime and the pressures of the cold war, national security assumed a higher priority than environmental protection, and practices were allowed that would not be allowed today. The public, acting through its representatives in Congress, has decided that this situation should be remedied, and the remediation of contaminated sites has become a very large federal program.

1-5. Scope

a. The cleanup of a site contaminated with radioactive waste materials can be a long and involved process. It starts with a general survey and characterization study of the area, followed by a feasibility study, and proceeds through evaluation of various technical alternatives for cleanup, volume reduction, waste handling, temporary storage, transportation, and permanent disposal.

b. This manual focuses on the evaluation of alternatives for low-level and mixed radioactive waste collection, handling, treatment, volume reduction, packaging, temporary storage, and transportation. The various types of disposal facilities are described briefly in order to demonstrate how different types of disposal practices influence the requirements for treatment, volume reduction, packaging, and transportation. Technologies that have been proven to work satisfactorily and have been demonstrated in full-scale operations, either in the United States or in Europe, are presented. Some technologies are included in the discussion because many promising treatment technologies are emerging in the demonstration stages.

c. Enough background and fundamentals are given in each section to enable the reader to understand the material provided, but extensive discussion of theory is not included. References are provided to other documents and works where the reader can find such material. Legal and administrative aspects are covered only briefly. If more detailed information is necessary, it should be obtained through Office of Counsel or from regulatory offices within the Corps.

d. Overall management guidelines for LLRW and MW site remediation are given in EM 1110 -35-1 to include procedures for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) investigations, health and safety considerations, data quality management, and quality assurance/quality control measures. The guidance contained in EM 1110-35-1 is applicable to the treatment and handling procedures described in this manual in the broader context of site remediation.

1-6. Coordination of DoD LLRW Disposal with IOC

a. DoD has officially designated the Department of the Army (DA) as the DoD Executive Agent for managing disposal of DoD's LLRW. These requirements are not binding on projects not involving DoD LLRW. The DA has delegated this responsibility to the U.S. Army Industrial Operations Command (IOC). IOC will perform the following services:

(1) Provide LLRW disposal services on a cost-reimbursable basis for the DoD components.

(2) Maintain central inventory of all LLRW disposed of through the DoD program and foster relationships with licensing agencies and compacts on behalf of the DoD LLRW program.

(3) Provide guidance to installations for management, storage, and disposal of LLRW.

(4) Maintain records necessary to demonstrate that all DoD LLRW is disposed of properly.

(5) Maintain a current compilation of federal and state LLRW disposal requirements.

(6) Report to the Deputy Under Secretary of Defense (Environmental Security) within 90 days after the close of each fiscal year the status of DoD's LLRW program, with a copy furnished to each DoD component.

b. USACE has responsibilities with regard to the Defense Environmental Restoration Program (DERP) and the Base Realignment and Closure Program. However, installation commanders may determine the appropriate contractual mechanisms to manage and dispose of LLRW generated by remediation activities associated with RCRA actions or DERP activities. Commanders may utilize LLRW disposal mechanisms available within USACE or IOC, or other mechanisms, as appropriate.

c. USACE must coordinate all LLRW disposal actions with IOC in order to ensure that appropriate records are maintained and reported. Therefore, all USACE elements must coordinate and report all LLRW potential projects and activities to the USACE HTRW-CX, (Omaha, NE 68144-3869). The USACE HTRW-CX will handle all USACE coordination with IOC.

d. In order to ensure that this is accomplished, all scopes of work or disposal plans that require or describe disposal of LLRW shall be submitted to the HTRW-MC for technical review. This review process is to assure that all requirements are being addressed and to provide guidance on disposal options. These documents need to be submitted as early in the planning stage as possible, to assure that a disposal mechanism is available and to avoid delays in the project. In addition, all requests for coordination with IOC shall be routed through the HTRW-CX after scopes of work or disposal plans have been reviewed. The HTRW-CX will provide assistance in coordination with IOC. The HTRW-CX will keep an inventory of all military and nonmilitary projects requiring disposal of LLRW and may request additional information as to the type and volumes of waste requiring disposal, and the proposed disposal or storage facility. Through an existing Inter-Service Support Agreement with IOC, the Corps can request disposal-related services from IOC. However, all such requests must be directed through the USACE HTRW-CX.